

Joint Interagency Multinational Sea-based Logistics Platforms: Utilizing Strategic Sealift to Enhance Geographic Combatant Commanders' Theater Engagement Capabilities

**A Monograph
by
CAPT Charles D. McDermott
U.S. Navy**



**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

AY 2011

REPORT DOCUMENTATION PAGE				<i>Form Approved</i> OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 11-05-2011		2. REPORT TYPE SAMS Monograph		3. DATES COVERED (From - To) June 2010 – May 2011	
4. TITLE AND SUBTITLE Joint Interagency Multinational Sea-based Logistics Platforms: Utilizing Strategic Sealift to Enhance Geographic Combatant Commanders' Theater Engagement Capabilities				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Captain Charles D. McDermott, United States Navy				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School of Advanced Military Studies (SAMS) 250 Gibbon Avenue Fort Leavenworth, KS 66027-2134				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Command and General Staff College 731 McClellan Avenue Fort Leavenworth, KS 66027-1350				10. SPONSOR/MONITOR'S ACRONYM(S) CGSC	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT U.S. national security depends in part on the Nation's ability to respond effectively to disasters, both at home and abroad. Recent responses have relied heavily on airlift, commercial and military, and U.S. Navy surface combatants. The per-ton cost of airlift is vastly more expensive than sealift and the operating costs of a Navy combatant can be as much as 20 times that of a strategic sealift ship. Still, planners virtually ignore sealift capabilities for disaster response. This paper examines a concept to utilize national strategic sealift assets to provide Geographic Combatant Commanders with dedicated sea-based logistics platforms to support theater engagement activities including but not limited to humanitarian and civic assistance (HCA) and humanitarian assistance and disaster response (HA/DR) operations. Other benefits of this program would include improved coordination among responders, ultimately reduced dependence on the military, and – with the platforms prepositioned in theater - the strategic messaging of American "humanitarian power projection."					
15. SUBJECT TERMS Strategic Sealift, Humanitarian Civic Assistance, Disaster Response, Theater Opening, Theater Engagement, HCA, HADR, TOPO					
16. SECURITY CLASSIFICATION OF: (U)			17. LIMITATION OF ABSTRACT (U)	18. NUMBER OF PAGES (U)	19a. NAME OF RESPONSIBLE PERSON Wayne W. Grigsby Jr. COL, U.S. Army
a. REPORT (U)	b. ABSTRACT (U)	c. THIS PAGE (U)			19b. TELEPHONE NUMBER (include area code) 913-758-3302

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

CAPT Charles D. McDermott, USN

Title of Monograph: Joint Interagency Multinational Sea-based Logistics
Platforms: Utilizing Strategic Sealift to Enhance Geographic Combatant
Commanders' Theater Engagement Capabilities

Approved by:

Robert W. Tomlinson, Col USAF (Ret.)

Monograph Director

G. Scott Gorman, Ph.D.

Second Reader

Wayne W. Grigsby, Jr. COL, IN

Director,
School of Advanced
Military Studies

Robert F. Baumann, Ph.D.

Director,
Graduate Degree
Programs

Disclaimer: Opinions, conclusions, and recommendations expressed or implied within are solely those of the author, and do not represent the views of the US Army School of Advanced Military Studies, the US Army Command and General Staff College, the United States Army, the Department of Defense, or any other US government agency. Cleared for public release: distribution unlimited.

Abstract

JOINT INTERAGENCY MULTINATIONAL SEA-BASED LOGISTICS
PLATFORMS: UTILIZING STRATEGIC SEALIFT TO ENHANCE GEOGRAPHIC
COMBATANT COMMANDERS' THEATER ENGAGEMENT CAPABILITIES by CAPT
Charles D McDermott, USN, 41 pages.

U.S. national security depends in part on the Nation's ability to respond effectively to disasters, both at home and abroad. Recent responses have relied heavily on airlift, commercial and military, and U.S. Navy surface combatants. The per-ton cost of airlift is vastly more expensive than sealift and the operating costs of a Navy combatant can be as much as 20 times that of a strategic sealift ship. Still, planners virtually ignore sealift capabilities for disaster response. This paper examines a concept to utilize national strategic sealift assets to provide Geographic Combatant Commanders with dedicated sea-based logistics platforms to support theater engagement activities including but not limited to humanitarian and civic assistance (HCA) and humanitarian assistance and disaster response (HA/DR) operations. Other benefits of this program would include improved coordination among responders, ultimately reduced dependence on the military, and – with the platforms prepositioned in theater - the strategic messaging of American "humanitarian power projection."

Table of Contents

Introduction.....	1
Strategic Policy	5
Literary Review	11
Advantages of Sealift and Sea-basing.....	14
Availability of Strategic Sealift	22
Potential for Sea-based Logistics in COCOM Activities.....	25
Comparing Platform Capabilities	27
Recommendation	29
Conclusion	32
Bibliography	34

Introduction

In his book *On War*, Carl von Clausewitz wrote that war is the continuation of politics by another means. Had Clausewitz written *On Humanitarian Assistance* instead, he might have argued with equal fervor “[humanitarian assistance] is not merely an act of policy but a true political instrument, a continuation of political intercourse carried on with other means. What remains peculiar to [humanitarian assistance] is simply the peculiar nature of its means.”¹ The United States will continue to respond to global humanitarian and disaster emergencies.² However, humanitarian assistance and disaster response (HA/DR) operations, both foreign and domestic, have become very expensive.³ With an ever-increasing national debt and persistent deficit spending, the U.S. Government (USG) must reduce the cost of engagement and disaster response operations.

The federal government’s rush to respond to disaster obviates the personal and civic responsibilities of individual citizens, communities, and local governments. When Hurricane Katrina struck the U.S. Gulf Coast in August 2005, the storm’s tidal surge forced a breach in the levees and overwhelmed pumping stations in the city of New Orleans, Louisiana. Several sections of the city were flooded and crisis ensued. The press severely criticized the federal government for its slow response to the disaster. However, the media was far less critical of the residents of

¹ Carl von Clausewitz, *On War*, trans. Peter Paret and Michael Howard (Princeton, NJ: Princeton University Press, 1976), 87.

² U.S. President, “National Security Strategy: May 2010,” (Washington, DC: Government Printing Office, 2010), 39. “Together with the American people and the international community, we will continue to respond to humanitarian crises to ensure that those in need have the protection and assistance they need.”

³ U.S. Agency for International Development, “Haiti - Earthquake Fact Sheet #73 Fiscal Year (FY) 2010, dated September 24, 2010,” www.usaid.gov/ht/docs/eqdocs/ofda_fact_sheets/09.24.2010_haiti_factsheet_73.pdf (accessed January 21, 2011). U.S. Agency for International Development, “Pakistan – Floods Fact Sheet #9 Fiscal Year (FY) 2011, dated January 21, 2011,” <http://www.usaid.gov/pk/downloads/da/01.21.11-USAID-DCHAPakistanFloodsFactSheet9-FY2011.pdf> (accessed February 1, 2011). The total estimated cost to USAID, State, and DOD for assistance to Haiti following the January 12, 2010 earthquake was \$1.14 billion. DOD’s share was \$464 million. The total estimated cost to USAID and State for assistance to Pakistan following heavy rains and flooding in late July 2010 was \$594.99 million.

New Orleans who chose to stay in the city, or of the city government that failed to adequately maintain the flood control system or provide a means to evacuate underprivileged residents. This disparity in assigning responsibility for preparedness at the appropriate levels has only increased the expectation for an overwhelming federal response, both domestically and abroad.

To reduce the need for a USG response, there must be an increase in responsibility, accountability, and capacity at the local level domestically and overseas. The various departments, agencies and organizations from the United States and other responding nations must improve coordination to share the burden and eliminate duplication of effort. Responders must reduce the transportation costs for moving massive amounts of supplies and heavy equipment typically provided for these activities. Only advance planning and effective utilization of all elements of national power can accomplish this.

In a post-Katrina environment, the federal government responds frequently under time constraints influenced more by political pressures than actual prioritized requirements at the disaster site.⁴ The 2010 Haiti earthquake response demonstrated that a fast response, no matter the cost, is more often the priority. Due to real or perceived urgency in delivering relief supplies, the nation has airlift as its only option. Airlift is the most expensive means of transport. Sealift, transportation by sea on merchant cargo ships, is far less expensive but generally viewed as too

⁴ Like all disasters, Hurricane Katrina was a “local disaster” and a local responsibility. When the New Orleans city government was overwhelmed, the county should have been next to step in. If the county government was overwhelmed, the State government was next in line to respond. Title V of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. §§5191-5193, as amended by, Section 681(b) of the Post Katrina Emergency Management Reform Act (PL 109-295), and implementing regulations at 44 CFR Part 206, Subparts B and C authorizes the President to issue a pre-disaster declaration. This now gives FEMA the authority to assume that local, county, and State governments will be overwhelmed. The Act also provides FEMA with surge account funding to enable FEMA to preposition supplies across a broad area in advance of a “possible” disaster. During the 2009 Red River flooding in North Dakota and surrounding States, FEMA spent hundreds of thousands of dollars prepositioning U.S. Regular Army and Army National Guard search and rescue helicopters in Fargo, over the protestations of the city’s mayor. Local citizens, volunteers, and North Dakota National Guard soldiers in State active duty spent endless hours filling sandbags to reinforce the levees. Fargo was “saved” by its citizens, not by the Federal government.

slow.⁵ This is true while the nation's strategic sealift assets are sitting empty and idle in various ports along the three coasts of the continental United States.

This paper examines a concept to provide combatant commanders with sea-based logistics platforms (SLP) that would support interagency and multinational partners in theater engagement, training, and disaster response activities. Under this concept, strategic sealift ships would be loaded with non-combat equipment and supplies typically provided for theater opening and sustainment, theater engagement activities, and HA/DR operations. The combatant commander in coordination with cooperating U.S. departments and agencies, principally Department of State and U.S. Agency for International Development (USAID), and other national and international organizations would determine the cargo load of each ship. The ships would then be pre-positioned in areas around the globe as best serves national security interests.

National strategic policy statements unambiguously declare that a strong economy and continued engagement with other nations deepen the connections between Americans and the citizens of those nations and in turn assure the security and prosperity of America.⁶ In light of this strategic guidance and the ongoing economic crisis, leaders within the Department of Defense have directed efficiency reviews of military programs related to logistics, theater engagement, and disaster response. This paper will review some of those policy statements and efficiency studies.

The concept of sea-basing disaster response equipment and supplies is not new. Various concepts have been developed and discussed at many levels within government and the

⁵ These comparisons are made against a "cold start" operation in one of two scenarios, diverting an active commercial ship or activating a defense reserve ship. In either case, a ship must be activated or otherwise made available for service. It must transit to the loading port, load cargo, transit to the discharge port at or near the disaster, and discharge cargo. The ship must complete all of this before it could be available on station to serve as a sea-based platform for cargo transshipment, communication, coordination and responder sustainment.

⁶ U.S. President, "National Security Strategy: May 2010," (Washington, DC: Government Printing Office, 2010), 12.

commercial sector. Military students at the U.S. Naval War College and Air War College have written on the topic and this paper will review those works.

To strengthen the argument for increased utilization of sealift assets, this paper will remind the reader of the enormous capacity of merchant shipping by reviewing historical sealift and sea-basing successes. The paper will also review recent operations that relied almost exclusively on airlift. These operations include disaster response, exercises, training, and theater engagement activities.

The Marine Corps Maritime Prepositioning Force (MPF) program serves as the model for the concept of sea-based logistics platforms (SLP) with regard to power projection and use of strategic sealift to support the rapid deployment of theater opening and initial sustainment capabilities. However, in the current global economic environment, creating a new program with an additional and substantial cost burden is infeasible. Therefore, it is necessary to identify efficiencies in the way the nation currently conducts theater engagement and HA/DR operations.

The U.S. Agency for International Development (USAID) and the Federal Emergency Management Agency (FEMA) are the lead Federal agencies for foreign and domestic disaster response, respectively. Department of Defense (DOD) has theater security interests and DOD overseas activities are coordinated with Department of State. There are countless private, public and governmental organizations engaged in humanitarian activities. The extent of all of these efforts and the true fiscal cost of humanitarian assistance and disaster response operations is difficult to discern. Likewise, the cost of any proposed alternative varies greatly on scenario used and actual or artificial constraints imposed.

Many aircraft and ship types could be suitable to provide strategic lift in a disaster response. The U.S. Air Force C-17 Globemaster III is arguably the workhorse of air mobility. The U.S. Marine Corps Maritime Prepositioning Force (MPF) ship *USNS 1st Lt Jack Lummus* has a long and proud history of participation in combat operations, readiness exercises, and HA/DR

operations. The unique capabilities of the C-17 and the *Lummus* will be discussed in comparing airlift to sealift.

A review of this concept is significant because there is clear indication from the current and previous administrations that the United States will continue to respond to global emergencies.⁷ The current Administration has also expressed a commitment to reducing deficit spending and the national debt.⁸ The mobility Air Forces continue to be heavily tasked meeting the increasing demand for strategic airlift to support both domestic and overseas contingencies.⁹ DOD has a large well-trained and well-disciplined expeditionary force and the logistics infrastructure necessary to respond to a truly catastrophic disaster. Still, the presence of U.S. military forces is viewed often with suspicion.¹⁰ This concept offers the possibility for the United States to truly bring to bear “all elements of national power” to provide innovation for greater global security and prosperity.

Strategic Policy

John F. Kennedy became President of the United States on January 20, 1961. In his inaugural address, President Kennedy spoke of sacrifice and selfless service and of America’s commitment to spreading prosperity and security across the globe.¹¹ Just seven months later, on

⁷ U.S. President, “National Security Strategy: May 2010,” (Washington, DC: Government Printing Office, 2010), 39. “Together with the American people and the international community, we will continue to respond to humanitarian crises to ensure that those in need have the protection and assistance they need.”

⁸ U.S. President, “National Security Strategy: May 2010,” (Washington, DC: Government Printing Office, 2010), 2. “Our commitment to deficit reduction will discipline us to make hard choices, and to avoid overreach. These steps complement our efforts to integrate homeland security with national security; including seamless coordination among Federal, state, and local governments to prevent, protect against, and respond to threats and natural disasters.”

⁹ Robert S. Hedden, “Prepositioned Sealift for Humanitarian Operations” (Department of the Air Force Air University, 2003), 4.

¹⁰ Miguel R. Martinez, “Lessons from Significant Foreign Disaster Relief Operations Applied to USAFRICOM” (U.S. Naval War College, 2008), 3-6.

¹¹ John F. Kennedy, Inaugural Address on January 20, 1961. “And so, my fellow Americans: ask not what your country can do for you--ask what you can do for your country. My fellow citizens of the world: ask not what America will do for you, but what together we can do for the freedom of man. ... To

September 4, Congress passed the *Foreign Assistance Act of 1961* to “promote the foreign policy, security, and general welfare of the United States by assisting peoples of the world in their efforts toward economic development and internal and external security, and for other purposes.”¹² The Act separated military from non-military forms of foreign assistance and established the United States Agency for International Development (USAID) to administer those non-military programs. On November 3, 1961, President Kennedy signed the Act into law and issued Executive Order 10973, detailing the reorganization.

In the *2010 National Security Strategy*, President Barack Obama described America as a nation actively developing capacity to prepare for, respond to, and recover from disasters more rapidly to minimize both short- and long-term effects. The President discussed improved integration of planning and capabilities in the public sector between federal, State, and local authorities. He also identified the vital role played by the private sector and the importance of strengthening public-private partnerships. The President emphasized that the nation must have plans and resources in place before disaster occurs. President Obama identified the need for reforms within the United Nations (U.N.) and affirmed the intent of the United States to work with U.N. member nations to increase the organization’s operational capacity for a range of activities including humanitarian relief and post-disaster recovery.¹³

In the *2011 National Military Strategy*, Admiral Michael G. Mullen, Chairman of the Joint Chiefs of Staff (CJCS), described a Joint Force that is most effective when its actions are coordinated with and in support of other elements of national power in “whole-of-nation” efforts to advance global security and prosperity. He spoke to leveraging forward deployed capabilities

those people in the huts and villages of half the globe struggling to break the bonds of mass misery, we pledge our best efforts to help them help themselves, for whatever period is required ... because it is right. If a free society cannot help the many who are poor, it cannot save the few who are rich.”

¹² Foreign Assistance Act of 1961 (P.L. 87-195), Preamble.

¹³ U.S. President, “National Security Strategy: May 2010,” (Washington, DC: Government Printing Office, 2010), 18.

specifically those multi-mission capable platforms in the maritime domain. Tying “theater security cooperation” and “humanitarian assistance” under a single heading, the Chairman identified the need to pool resources. He identified the critical nature of collaboration and preparation to ensure interagency and international interoperability before crisis. He discussed the expeditionary nature of the Joint Force as well as the need to maintain a “smaller logistical footprint” and minimize fuel energy demands while training in austere environments. The Chairman addressed leveraging sea-borne mobility and the need to conduct more joint, combined, interagency and multinational training, exercises and experimentation. Chairman Mullen spoke directly to being prepared to “support and facilitate” USAID’s response. He specifically identified logistics as a means by which DOD could support Department of Homeland Security (DHS).¹⁴ With the great number of large U.S. cities on or near the coast and with the consistent threat of hurricanes to U.S. coastal States, sea-based logistics are very important to homeland security as well.

President George W. Bush outlined the nation’s need for robust logistics capability in releasing the first National Strategy for Homeland Security in July 2002. The President issued this document less than one year after the terrorist attacks of September 11, 2001 and prior to the establishment of DHS on November 25, 2002. The current Strategy was released on October 2007, replete with lessons learned from the ongoing War on Terror and the “failed” Federal response to the Hurricane Katrina disaster. In his introduction letter to the 2007 Strategy, President Bush identified homeland security as a shared national responsibility with individual responsibility at its core. The Strategy recognized that non-terrorist events such as catastrophic natural disasters similar to Hurricane Katrina could have significant implications for homeland

¹⁴ Chairman of the Joint Chiefs of Staff, “National Military Strategy of the United States of America, 2011: Redefining America’s Military Leadership,” (Washington, DC: Government Printing Office, 2011), cover letter, 9, 19, 15, 18, 20.

security. The Strategy further recognized that seven hurricanes rank in the top ten most costly disasters in U.S. history with Hurricane Katrina topping the list.¹⁵ Earthquakes, tsunamis, hurricanes, and cyclones also continue to threaten U.S. States, territories, allies and friends overseas. Having a domestic sea-based capability could help mitigate the threat from these disasters.

Chairman Mullen addressed humanitarian assistance and disaster relief again in the *CJCS Guidance for 2011*. Mullen acknowledged that these contingencies will occur and the military services must maintain full-spectrum capabilities and restore readiness. The Chairman defined readiness as providing combatant commanders with the capabilities they require to accomplish their missions. He recognized the need to find and employ efficiencies across the enterprise to focus limited resources where they will have the greatest impact to ensuring national security. Chairman Mullen acknowledged that the war in Afghanistan is a land war and that maritime and air forces must carry a portion of the land force responsibilities as well as their own to maintain a ready forward presence and balance global strategic risk.¹⁶ Two of the Combatant Commanders have identified the need to leverage maritime capabilities, specifically sealift.

As Commander of U.S. Africa Command, General William E. Ward recognized that the United States must adjust the makeup of its Prepositioned War Reserve Material (PWRM) to better support the requirements of the Command's comprehensive theater engagement strategy. In his 2008 statement before the House Armed Services Committee, Ward also identified the need to improve transportation infrastructure and transportation security across the continent. Ward specifically mentioned "rapid sealift platforms" in his statement. By "rapid," Ward was presumably referring to the Joint High Speed Vessel (JHSV) for intra-theater movement of

¹⁵ U.S. President, "National Strategy for Homeland Security: October 2007" (Washington, DC: Government Printing Office, 2011), introduction, 3, 10.

¹⁶ Chairman of the Joint Chiefs of Staff, "CJCS Guidance for 2011," (Washington, DC: Government Printing Office, 2011), 5.

personnel and cargo. However, his statement acknowledged a need for increased utilization of sealift capacity.¹⁷

In a February 7, 2011 speech in Washington D.C., General Duncan McNabb, Commander of U.S. Transportation Command (USTRANSCOM), stated that the rising cost of fuel necessitates a change in the way the military moves cargo. General McNabb indicated that DOD would have to reduce reliance on airlift and depend more heavily on a combination of transportation modes. “Multimodal transportation” could include for example, combat vehicles moved by train from post to a seaport of embarkation, loaded on ship and sealifted to a seaport of debarkation in the Persian Gulf, trucked to an aerial port of embarkation, airlifted to an aerial port of debarkation in theater, and trucked or driven the receiving depot.¹⁸ In 2009, USTRANSCOM saved thirty-eight days and approximately \$100 million moving 328 Stryker vehicles using multimodal transportation, i.e. sealift vice airlift for the ocean crossing.¹⁹ The efforts of USTRANSCOM to identify best business practices in transportation align perfectly with the Secretary of Defense Efficiency Initiative.

Defense Secretary Robert M. Gates directed the Office of the Secretary of Defense, Director for Cost Assessment and Program Evaluation (OSD-CAPE) to conduct the Global

¹⁷ U.S. Congress, House, *Statement of General William E. Ward, U.S. Army, Commander, United States Africa Command before the House Armed Services Committee, 13 March 2008*. “In the long-term, the U.S. must encourage the improvement of civilian transportation infrastructure and its security across the African continent, but the near term requires an increase in the quantity and capacity of military air and rapid sealift platforms made available to AFRICOM.” “With AFRICOM missions supporting State and USAID capacity building and humanitarian assistance, this will require the Services to re-assess the [Pre-positioned War Reserve Materiel (PWRM)] equipment sets that are strategically located in our region. Disaster relief, humanitarian assistance, and capacity building equipment and supplies are very different from traditional PWRM sets.”

¹⁸ Scott Fontaine, “To Save of Fuel Costs, TRANSCOM Mixes it Up,” *Air Force Times*, February 14, 2011.

¹⁹ Jeffrey Ackerson, e-mail message to author, May 2, 2011. “Air only cost projection was 118 days to close at \$170 million. Actual multimodal move was closed in 80 days at \$67.5 million in transportation cost, a 60% savings.

Prepositioned Materiel Capabilities Study (GPMCS).²⁰ Frequently referred to as the “OSD-CAPE study,” GPMCS examined the current structure for prepositioned stocks afloat and ashore to identify what was required and where it should be located to best support the National Military Strategy. The primary impetus for conducting the study was the impending costs of reconstituting some of the stocks. Other reasons included shifting threats, increased capabilities of partner nations, and the ever-increasing focus on theater security cooperation, humanitarian assistance, disaster response, and additional operations other than war. The primary focus of GPMCS was the prepositioned materiel afloat in the Maritime Prepositioning Ships (MPS) program. The report recommended the redeployment of MPS Squadron One from the Mediterranean Sea to a port on the U.S. East Coast.²¹ This change is expected to remove the Waterman-class MPS ship *USNS PFC Eugene A. Obregon* from active service to reduced operating status in the reserve fleet.²² The *Obregon* would perhaps then be the perfect platform for proof of concept.

The SLP concept can also facilitate efficiencies in theater or port opening capabilities. The U.S. Transportation Command (USTRANSCOM) initiated the Joint Task Force – Port Opening (JTF-PO) program in 2005 to establish an expeditionary force to open aerial and sea ports of debarkation and initial distribution networks to support joint operations.²³ JTF-PO can

²⁰ Secretary of Defense, Memorandum, “Department of Defense (DOD) Efficiencies Initiative,” August 16, 2010. <https://dap.dau.mil/policy/Documents/Policy/OSD%2009637-10.pdf> (accessed February 1, 2011). “Earlier this year, I directed a four-track approach to move our defense enterprise toward and more efficient, effective, and cost-conscious way of doing business. The four tracks include shifting overhead costs to force structure and future modernization accounts, inviting outside experts to suggest ways the Department can be more efficient, conducting front end assessments to inform the Fiscal Year (FY) 2012 budget request, and reducing excess and duplication across the defense enterprise. As a part of the fourth track, I am directing a series of initiatives designed to reduce duplication, overhead, and excess, and instill a culture of savings and restraint across the DOD.” <https://dap.dau.mil/policy/Documents/Policy/OSD%2009637-10.pdf>

²¹ Office of the Secretary of Defense, Director for Cost Assessment and Program Evaluation (OSD-CAPE), “Global Prepositioned Materiel Capabilities Study (GPMCS) Final Report,” Brief dated November 23, 2010.

²² Keith Bauer, interview by author, Washington, DC, April 7, 2011.

²³ SRA International, “Enterprise Logistics: Joint Task Force – Port Opening,” SRA International, <http://www.sra.com/enterprise-logistics/joint-task-force-port-opening.php> (accessed February 3, 2011).

conduct simultaneous operations at either an APOD and a SPOD, or two APODs. JTF-PO operates APOD/SPOD for 45-60 days before transitioning to theater logistics forces. Forces are self-sustaining for 5 days (APOD) to 7 days (SPOD). JTF-PO provides communications, cargo handling and end-to-end intermodal cargo movement capabilities including in-transit visibility (ITV) and radio frequency identification (RFID). Carrying these capabilities aboard ship could also enable rapid deployment of heavy equipment often required in HCA and HA/DR operations.

Literary Review

Robert S. Hedden, Major U.S. Air Force, recognized that U.S. military participation in HA/DR operations, especially in transportation, had increased substantially. This resulted in a heavier tasking for an already over-tasked airlift fleet. Hedden asserted that U.S. support to humanitarian operations was less about helping people and more about achieving the political objectives of the National Security Strategy. In his analysis, Hedden appropriately focused on timeliness and cost. Not surprisingly, Hedden argued against sea-based logistics for HA/DR. He contended that sea basing could not meet disaster time requirements and would cost more than the current system of land-based warehousing combined with a mix of commercial and military airlift. Unfortunately, Hedden based his conclusions on several false or incomplete assumptions.

Hedden stated, “The United States Government (USG) seeks to respond to a humanitarian emergency with an initial delivery of relief supplies in 48 hours.”²⁴ He neither provided a source for this 48-hour requirement nor identified what drives this delivery timeline. He also did not define what “supplies” are included in “an initial delivery of relief supplies.”

²⁴ Robert S. Hedden, “Prepositioned Sealift for Humanitarian Operations” (Department of the Air Force Air University, 2003), 10, ix.

Hedden incorrectly assumed that HA/DR sealift could be prepositioned only in those locations that were currently hosting the U.S. Navy's Maritime Preposition Ships (MPS) program.²⁵

Hedden maintained that ground transportation from the seaport to the incident site would further delay transportation by strategic sealift but failed to acknowledge that the same restriction would apply to strategic airlift.²⁶ Hedden argued that customs would delay sealift cargo presumably contending that airlift cargo was exempt from customs requirements. He argued that building and operating ships was cost-prohibitive but failed to acknowledge the comparative cost of aircraft against lift capacity. Hedden misleadingly quoted Eileen Isola to imply humanitarian operations are as controversial as peacekeeping operations.²⁷ It is not surprising that an Air Force officer would argue against sealift in favor of airlift. Nor is it surprising that a Navy officer would argue for sealift.

U.S. Navy Lieutenant Miguel R. Martinez examined U.S. military support to four natural and man-made foreign disaster responses. Martinez made recommendations on force levels, inter- and intra-theater logistics, and coordination. To illustrate his argument for equipment and supplies being prepositioned in theater, Martinez pointed to the delay of the hospital ship USNS MERCY arriving in theater six weeks after the 2004 Asian tsunami due primarily to a thirty-day sea transit from her home port in San Diego. He also argued for addressing readiness issues by

²⁵ The Maritime Preposition Ship (MPS) squadrons are currently based at the Mediterranean Sea, Diego Garcia in the Indian Ocean, and Guam/Saipan in the western Pacific Ocean. MPS squadrons are based at these locations for specific reasons including proximity to military threat, force protection of crews and combat cargo, and reluctance of many nations to host these platforms near populated areas due to the explosive cargo carried onboard.

²⁶ The amount of ground delay would be affected primarily on the distance to the disaster site from the seaport or airport.

²⁷ Eileen Isola, "Leading Air Mobility Operations in Complex Humanitarian Emergencies" (Department of the Air Force Air University, 2002), 3. "Peace operations are as much about hegemony as humanitarianism; they are frequently controversial, with a host of differing opinions about their nature and purposes."

including “seldom used assets” in security cooperation activities.²⁸ Martinez makes the point that the use of military capabilities is most appropriate where traditional aid organizations have difficulty operating. These might be areas of treacherous terrain or where transportation infrastructure is absent or significantly damaged.

Martinez appropriately cited Joint Publication 3-07.6 *Joint Tactics, Techniques, and Procedures for Foreign Humanitarian Assistance* in clarifying that foreign humanitarian assistance (FHA) provided by U.S. military forces is intended to be of limited “scope and duration” and to “supplement and compliment” host nation efforts and the efforts of those organizations with primary responsibility.²⁹ He further emphasized the importance of the five C’s of effective response execution - communication, coordination, cooperation, compromise, and consensus. Martinez also demonstrated the dividends paid when U.S. military forces have previously exercised with host nation militaries.

Martinez referenced the writings of Bruce A. Elleman. In *Waves of Hope: the U.S. Navy’s Response to the Tsunami in Northern Indonesia*, Elleman provided an in-depth look at the 2004 Asian tsunami crisis and the maritime response. He focused particularly on the strategic, operational, and tactical advantages of sea-based platforms to facilitate rapid response while minimizing the footprint ashore. Elleman pointed out that only two weeks after the tsunami waves came ashore, 15,000 U.S. service members were on scene providing relief. A sea-based logistics hub made up of twenty-five U.S. Navy ships and one U.S. Coast Guard ship supported these personnel, forty-five fixed-wing aircraft, and fifty-eight rotary-wing aircraft. “Because of the extent of the local devastation, including the destruction of roads, bridges, and docks, sea

²⁸ Miguel R. Martinez, “Lessons from Significant Foreign Disaster Relief Operations Applied to USAFRICOM” (U.S. Naval War College, 2008), 15. Martinez examined U.S. military support to *Operations Sea Angel* for the 1991 Bangladesh cyclone, *Support Hope* for the 1994 Rwandan genocide, *Unified Assistance* for the 2004 Asian tsunami, and *Lifeline* for the 2005 Pakistan earthquake.

²⁹ Joint Publication 3-07.6 revised in Joint Publication 3-29 *Foreign Humanitarian Assistance*, dated 17 March 2009.

basing was critical to the success of this humanitarian mission.”³⁰ However, the 2004 Asian tsunami response was just one of many demonstrations of strategic, operational, and tactical successes of sealift and sea basing.

Advantages of Sealift and Sea-basing

Historically, effective planning and utilization of national sealift resources have enabled critical strategic and operational military successes. Most notable among these is the World War II D-Day landings on the beaches of Normandy, France on June 6, 1944. A total force of 4,126 transport craft, 1,213 warships, 864 merchant ships, and 736 auxiliary vessels made up the invasion fleet.³¹ Arguably, the sustainment forces ultimately assured the Allied success in the Battle of Normandy and the liberation of France. For this achievement, the allied forces had to build a seaport where none existed.

Years of secret planning, experimentation and construction ultimately led to the development of the “Mulberry Harbors.” Merely three days after the landings, Allied forces completed the construction of two artificial harbors at Omaha Beach and Arromanches. These artificial seaports were designed by the British and codenamed “Mulberry A” and “Mulberry B,” respectively. To account for the range of tides, the Mulberries’ unique feature was 10 miles of floating roadways, a precursor to modern Logistics over the Shore (LOTS). A large storm on June 19 destroyed Mulberry A but Mulberry B at Arromanches saw heavy use for another 8 months until Allied forces were able to secure, repair, and shift operations to the port of Cherbourg and other French seaports. Over 2.5 million men, 500,000 vehicles, and 4 million tons of supplies

³⁰ Bruce A. Elleman, *Waves of Hope: The U.S. Navy’s Response to the Tsunami in Northern Indonesia* (Newport, RI: Navy War College Press, 2007), 27.

³¹ Wikipedia, “Normandy Landings,” http://en.wikipedia.org/wiki/Normandy_landings (accessed February 1, 2011).

came ashore via the Mulberries.³² The second most significant display of military sealift would not come until fifty-six years later in the deserts of the Middle East.

Iraqi forces invaded Kuwait on August 2, 1990. The availability of sustainment supplies prepositioned on ships, sea-based combat logistics, made it possible to bring in ground combat forces early on. Heavy equipment and thirty-day sustainment supplies from the Maritime Prepositioning Force (MPF) ships arriving from Diego Garcia in the Indian Ocean and Guam/Saipan in the South Pacific Ocean supported the 7th and the 1st Marine Expeditionary Brigades (MEB). The two MPF squadrons completed off-load on September 2 and September 5, respectively – just thirty days after the Iraqi invasion.³³ By early November, just three months after the invasion, transportation forces delivered more than 190,000 men and nearly two million tons of equipment and supplies to Saudi Arabia. Sealift moved ninety-five percent of that cargo.³⁴

Sealift also successfully supported security assistance operations. The MPF ship *USNS Ist Lt Jack Lummus* was among the first ships to arrive with *USS Tripoli* (LPH 10) Amphibious Task Force (ATF) at Mogadishu, Somalia in December 1992 where security issues hampered a United Nations mission to end years of starvation. After discharging her Marine Corps combat cargo, *Lummus* remained on station in Mogadishu to serve as a logistics base providing critical shelter, food and fresh water to deployed Marines and a local population in crisis.³⁵ An accidental shooting in the first days of the operation resulted in the death of two Somalis and wounding of seven others. No U.S. Army or coalition field hospitals had yet arrived and *Tripoli* had the best medical facilities and surgical teams within the ATF. The wounded were treated onboard *Tripoli*

³² Wikipedia, “Mulberry Harbour,” http://en.wikipedia.org/wiki/Mulberry_harbour (accessed February 1, 2011).

³³ Richard M. Swain, *Lucky War: Third Army in Desert Storm* (Kansas, U.S. Army Command and General Staff College Press, 1997), 35.

³⁴ Robert B. Lambert, *Sealift in Operation Desert Shield* (Pennsylvania, U.S. Army War College Press, 1991), 1.

³⁵ Mike Neuhardt and Trish Larson, “Lummus and JLOTS Lift Hearts in Haiti.” *Sealift*, March 2010. <http://www.msc.navy.mil/sealift/2010/March/lummus.htm> (accessed February 3, 2011)

and all recovered. This incident demonstrated the value of sea-based medical facilities and the criticality of having them available at the start of an operation.³⁶

In the domestic context, the September 11, 2001 terrorist attacks in New York City provide another example of the critical care provided onboard a sea-based platform. Within hours of the attack, the U.S. Navy activated the hospital ship *USNS Comfort* in her home port of Baltimore - only 220 miles from the disaster site. *Comfort* had a crew and necessary equipment onboard, was able to get underway immediately and arrived on station in New York just three days later. The number of serious injuries was substantially less than anticipated. Local and regional hospitals were able to absorb the influx of patients. Nonetheless, *Comfort* remained pier side for two weeks providing meals, lodging, and medical and counseling services to relief workers.³⁷ *Comfort's* rapid response to the disaster illustrates the criticality of having sea-based assets in theater and able to get underway in hours, not days or weeks. Likewise, Navy combatants can be a "Global Force for Good" when they are forward deployed and can respond quickly to foreign disasters.

On December 26, 2004, a 9.0 magnitude undersea earthquake centered off the west coast of Sumatra, Indonesia triggered a series of devastating tsunami waves that struck most landmasses bordering the Indian Ocean resulting in the death of at least 283,100 people in fourteen countries.³⁸ As discussed previously, sea-based logistics from Navy and Coast Guard ships participating in Operation Unified Assistance provided the support necessary to affect a massive international response while virtually eliminating the need for basing ashore. These ships

³⁶ Gary J. Ohls, *Somalia ... From the Sea* (Newport, RI: Navy War College Press, 2009), 100-101.

³⁷ U.S. Navy Military Sealift Command, "USNS Comfort (T-AH 20) Fact Sheet," U.S. Navy, http://www.defense.gov/home/features/2010/0110_haiti/images/USNSComfortFactSheet.pdf (accessed February 1, 2011).

³⁸ U.S. Geological Service, "Summary of Magnitude 9.0 Sumatra-Andaman Islands Earthquake & Tsunami: Sunday, December 26, 2004 at 00:58:53 UTC," <http://earthquake.usgs.gov/earthquakes/eqinthenews/2004/us2004slav/eqsummary.html> (accessed February 1, 2011).

provided personnel and extensive airlift support. However, they did not carry much in the way of relief supplies for the scope of the disaster or the heavy machinery, construction, and engineering capacity needed to repair tremendous infrastructure damage. The significant amount of useful equipment onboard the Marine Corps MPF ships responding was not available because accessing it would have required extensive offload of combat equipment and compromised unit integrity. However, those combat-loaded sealift ships proved useful in disasters response by supplying tremendous amounts of fuel and potable water. However, even empty strategic sealift ships have provided significant capability in domestic disasters.

Hurricanes Katrina and Rita struck the U.S. Gulf Coast with devastating effect in August and September 2005. The Federal Emergency Management Agency (FEMA) ultimately utilized nine ships from the U.S. Maritime Administration's Ready Reserve Force (RRF) and National Defense Reserve Fleet (NDRF) in relief operations in Louisiana and Texas. The ships served as temporary headquarters for the Port of New Orleans, greatly expediting the resumption of port operations to restore the local economy. They provided food, water, shower facilities, laundry services, and even air-conditioned cargo holds as temporary shelter for U.S. Army, National Guard, FEMA workers, local police, doctors, nurses, and other relief workers. These nine ships provided an estimated 270,000 meals and 83,000 accommodations. The ships also provided fuel to restore or maintain power at nearby pumping stations, water treatment plants, hospitals, emergency shelters, responder command centers, and emergency vehicles.³⁹ These ships proved to be a tremendous asset to the U.S. government response to these domestic disasters. However,

³⁹ Katie Dunnigan, "MSC Call to Action: Hurricane Katrina Relief," *USNS Comfort*. <http://www.msc.navy.mil/comfort/katrina/action.htm> (accessed February 18, 2011). U.S. Department of Transportation, "Five Years Later, Our Commitment Continues," *Fast Lane*, August 30, 2010. <http://fastlane.dot.gov/2010/08/dot-katrina-effort-began-immediately-work-continues-five-years-later.html> (accessed February 1, 2011). U.S. Department of Transportation, "Danger and Opportunity; Hurricane Recovery Support," *Multimedia Gallery, Maritime Administration Video Archives*. http://www.marad.dot.gov/library_landing_page/multimedia/multimedia.htm (accessed February 3, 2011). Video details the communications, decision processes, authorities, capabilities provided, and the immediate impact these ships had upon the quality of life and return of the local economies in the Gulf Coast states.

when Hurricane Ike struck just three years later, FEMA called in the Navy's Tarawa-class amphibious assault ship *USS Nassau (LHA 4)*.

Tropical Storm Ike reached major hurricane strength on September 3, 2008 and the Governors of Florida, Louisiana, Alabama and Texas promptly declared states of emergency. Under authorities provided in the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), FEMA prepositioned emergency supplies and response crews along the Gulf Coast in advance of the storm. Hurricane Ike made U.S. landfall at Galveston, Texas on September 13 and ultimately caused an estimated \$29.6 billion in property damage to become the third most costly hurricane in U.S. history behind Hurricanes Katrina (2005) and Andrew (1992).⁴⁰

DOD provided substantial support to FEMA including rotary-wing aircraft for both transportation and search and rescue, and side-scanning sonar capability for waterway debris clearance. FEMA issued a mission assignment (e.g. tasking order) to DOD for \$20 million to operate the *USS Nassau (LHA 4)* off the coast of Galveston Island, Texas for 17 days.⁴¹ By comparison, for the same cost, an MPS ship could remain on station conducting round-the-clock cargo operations for 250 days.⁴² Here again, this was a U.S. coastal event and abundant domestic resources were available. The greater challenge comes in responding to disasters in more distant U.S. States or territories, as was the case with the 2009 tsunami at American Samoa.

⁴⁰ Wikipedia, "Hurricane Ike," http://en.wikipedia.org/wiki/Hurricane_ike (accessed January 10, 2011)

⁴¹ FEMA Mission Assignment # 3294EM-TX-DOD-06, dated September 11, 2008. "Assistance Requested: Request DOD provide large platform ship capable of supporting 24/7 disaster recovery operations. Should be capable of handling both civilian and military helos, capable of refueling helos, possess landing craft to move USAR assets, have comms capability, and be able to provide temporary medical facilities with 500 beds. Request asset be available in 48 hours of landfall. Total Cost Estimate: \$20,000,000."

⁴² Calculation based on a daily rate of \$80,000 to conduct at-sea cargo discharge (i.e. LOTS) operations.

On September 29, 2009, an 8.3 magnitude submarine earthquake struck near the Samoan Islands in the South Pacific Ocean. The earthquake generated tsunami waves at Pago Pago, the American Samoa territory's capital. The wave impact and the resultant flooding killed 30 people and injured hundreds.⁴³ A local power plant was disabled and FEMA mission assigned DOD to airlift forty-six (46) generators from Hawaii to American Samoa. Hawaii National Guard C-17s executed the missions, flying the 2,300-mile trip one-way in five to six hours.

Ultimately, DOD provided airlift for 667.5 tons of cargo over the next ten days. The cargo including 26, 539 meals, 14,400 liters of water, 4,091 wash kits, 2,836 cots, 2,000 toilet kit bags, 2,000 D batteries, 1,884 blankets, 1,615 tents, 786 camp kits, 275 toilet kits, and the 46 generators at a cost of \$2.35 million.⁴⁴ This does not capture the airlift provided by commercial airlines under contract to FEMA or private, non-governmental, or non-profit organizations. The total DOD airlift to American Samoa made up only 3.4% of the cargo capacity of a merchant cargo ship with room for nearly 19,000 tons of additional cargo. Even more significantly, the merchant cargo ship could have made the trip in less than six days, four days earlier than airlift by C-17 and at less than 25% of the cost.⁴⁵ The most recent example of the U.S. Government truly using all elements of national power, to include airlift and sealift, was the 2010 Haiti earthquake response.

A magnitude 7.0 earthquake struck Port-au-Prince, Haiti on January 12, 2010. An estimated 230,000 people died with 300,000 injured and upwards of 1.5 million displaced

⁴³ U.S. Department of Homeland Security Office of the Inspector General, "American Samoa 2009 Earthquake and Tsunami: After-Action Report," (Washington, DC: Government Printing Office, 2010), 2. http://www.dhs.gov/xoig/assets/mgmttrpts/OIG_11-03_Oct10.pdf (accessed January 10, 2011).

⁴⁴ U.S. Pacific Command, "HA/DR Samoa SAAM Missions" spreadsheet and "Disaster Relief – Samoa (30Sept – UTC)" briefing slides. Cost estimates include return trip, empty or with return cargo or personnel.

⁴⁵ Calculations based on USNS Lummus with dry cargo capacity of 19,588 tons, speed of 17.7 knots, and daily operating cost of \$51,960 or \$2,165 per hour. Cost estimate includes the ship's return trip. Source: MSCHQ PM3.

internally.⁴⁶ Just ten days later, DOD had 13,657 personnel responding with 10,399 of those remaining afloat. The number of DOD personnel peaked at 22,268. Ultimately 23 U.S. Navy ships, 10 U.S. Coast Guard ships, 264 fixed-wing aircraft, and 57 rotary-wing aircraft supported the relief efforts.⁴⁷

The Navy's Military Sealift Command (MSC) activated 21 ships and more than 2,600 personnel to support operations in Haiti. The hospital ship *USNS Comfort* was underway in just three days while other MSC ships carried additional medical capabilities. Fleet replenishment oiler *USNS Big Horn* and the dry cargo/ammunition ships *USNS Sacagawea* and *USNS Lewis and Clark* kept the *USS Carl Vinson* Carrier Strike Group and *USS Bataan* and *USS Nassau* Amphibious Ready Groups supplied on station. Rescue and salvage ship *USNS Grasp* and the embarked U.S. Army 544th Dive Engineer Team cleared the Port-au-Prince harbor of damaged containers and debris and assisted in evaluating the integrity of the docks. Oceanographic survey ships *USNS Henson* and *USNS Sumner* surveyed the harbor and adjacent waters to identify potential hazards to ships bringing in relief supplies.⁴⁸

At the time of the earthquake, two Marine Corps Maritime Prepositioning Force (MPF) ships, *USNS 1st Lt Jack Lummus* and *USNS PFC Dewayne T. Williams*, were at Blount Island Command (BIC) in Jacksonville, Florida for cargo overhaul. *Lummus* was able to expedite her offload of combat cargo and reload with disaster response applicable cargo. When *Lummus* sailed for Haiti, she carried a tailored package of U.S. Marine Corps construction equipment and supplies, lighterage to support logistics-over-the-shore (LOTS) operations, and cargo for USAID,

⁴⁶ U.S. Agency for International Development, "Haiti: Post-earthquake Response Homepage," <http://www.usaid.gov/ht/helphaiti.html> (accessed January 20, 2011).

⁴⁷ U.S. Southern Command, "Helping Haiti: A Look Back at Operation Unified Response." *Fact File*, November 1, 2010. <http://www.southcom.mil/AppsSC/factFilesLarge.php?id=138> (accessed February 20, 2011).

⁴⁸ Mark H. Buzby, "Commander's Perspective: Haiti Earthquake Relief," *Sealift*, March 2010. <http://www.msc.navy.mil/sealift/2010/March/perspective.htm> (accessed January 20, 2011).

FEMA and other Federal agencies. *Lummus*' cargo and LOTS capabilities allowed for the first delivery of heavy equipment to post-earthquake Haiti. *Williams* brought a large quantity of Army and Navy Construction Battalion (Seabee) equipment, rolling stock, and support and sustainment capability for Navy cargo handlers and Seabees.⁴⁹

U.S. Transportation Command (USTRANSCOM) activated four Ready Reserve Force (RRF) ships that came under MSC operational control. The crane ship *SS Cornhusker State* assisted with LOTS operations to support transshipment and onward movement of relief supplies from arriving commercial cargo ships unable to use the devastated port. *SS Cape May* delivered Seabee construction gear, three additional sets of lighterage and a roll-on/roll-off discharge facility.

USTRANSCOM also activated the high-speed ferries *MV Huakai* and *MV Alakai*. Similar to the purpose of the JHSVs, the ferries moved personnel, vehicles and supplies between Jacksonville, Florida and Haiti. Each carries 450 tons of cargo and up to 500 passengers and can travel at speeds up to 40 knots. *Huakai* carried a rapid port opening package, communications gear, forklifts, trucks, Humvees, supplies and other equipment. She also carried personnel from the Army's 689th Rapid Port Opening Element, MSC's Expeditionary Port Unit Detachment, and elements from the Army's 7th Sustainment Brigade.

MSC contracted five tug/barge combinations to help with carrying supplies to and from points around Haiti, in addition to contracting a regular tugboat to assist movement of ships in Port-au-Prince harbor during LOTS operations.⁵⁰ In time, USTRANSCOM contracted with Crowley Maritime Corporation for a tug, barge, and crane capability. The arrival of this commercial capability allowed for the gradual withdrawal of DOD forces.

⁴⁹ Ibid.

⁵⁰ Ibid.

The total cost of the Federal response to the Haiti Earthquake as of September 24, 2010 was \$1.14 billion. DOD's share made up nearly half that cost at \$484 million.⁵¹ Because of Haiti's proximity to the United States, nearly all of our national assets were available to respond. The *Lummus* and *Williams*, with their tremendous LOTS capabilities, were only coincidentally available. Normally forward deployed, both ships just happened to be completely or very nearly empty of combat equipment and had full crew compliment onboard. The Maritime Administration ships would not have been available to a more distant disaster. All NDRF and RRF ships are home ported in the continental United States, empty, with minimal fuel, and minimally crewed. However, like the Hurricane Ike response in 2008, the Haiti earthquake response illustrated again that relying on Navy combatants for logistical support from the sea is extraordinarily expensive. The next area of consideration then would be the availability of strategic sealift.

Availability of Strategic Sealift

Today's U.S. ocean-going merchant fleet totals only about 348 ships. These are ships owned by U.S. companies and registered in the U.S. An additional 732 ships are U.S.-owned but registered in other countries. Compare this to the top three shipping nations of Japan with 3,757 ships, Germany with 3,380, and China with 3,247.⁵² In an effort to alleviate concern over the decline in U.S. commercial shipping, the U.S. Navy and U.S. Maritime Administration manage several programs designed to ensure U.S. military access to mobility sealift capacity.

At its height in 1950, the National Defense Reserve Fleet (NDRF) consisted of 2,277 government-owned merchant cargo ships held in varying conditions of readiness to support the

⁵¹ U.S. Agency for International Development, "Haiti - Earthquake Fact Sheet #73 Fiscal Year (FY) 2010, dated September 24, 2010," www.usaid.gov/ht/docs/eqdocs/ofda_fact_sheets/09.24.2010_haiti_factsheet_73.pdf (accessed January 10, 2011).

⁵² Wikipedia, "List of Merchant Marine Capacity by Country," http://en.wikipedia.org/wiki/List_of_merchant_marine_capacity_by_country (accessed April 29, 2011).

nation's strategic sealift requirements.⁵³ As of December 31, 2010, the NDRF consisted of 158 ships including forty-nine ships in the highest state of readiness in the Ready Reserve Force (RRF). The RRF are home-ported in commercial maritime ports along each of the three U.S. coasts. RRF ships are generally maintained in reduced operating status (ROS) with the expectation of being fully crewed, provisioned, and underway in as little as four days. When underway in full operating status (FOS), these ships are crewed by as many as thirty-five merchant marine officers and crew. In ROS however, RRF ships may carry up to ten personnel, primarily engineering staff. The annual cost of maintaining the RRF fleet is \$275.5 million, or approximately \$5.62 million per ship.⁵⁴ Over the course of the Iraq and Afghanistan wars, the consistent availability of commercial shipping has largely relegated the RRF to sitting empty and idle.

The Maritime Security Program (MSP) maintains standby contracts with owners of sixty "active, commercially viable, militarily useful, privately owned vessels to meet national defense or other security requirements." Each ship owner receives an annual "retainer" payment of approximately \$2.9 million per ship making the annual cost of the program \$174 million excluding the U.S. Maritime Administration's administrative overhead costs.⁵⁵ Given the proven availability of commercial sealift in the recent wars and with U.S. allies like Japan, Germany, and South Korea (1,144 ships) having thousands of ships in their merchant fleets, MSP seems hardly justified.

⁵³ U.S. Maritime Administration, "National Defense Reserve Fleet: Introduction," http://www.marad.dot.gov/ships_shipping_landing_page/national_security/ship_operations/national_defense_reserve_fleet/national_defense_reserve_fleet.htm (accessed February 1, 2011).

⁵⁴ U.S. Navy, "Department of the Navy Fiscal Year (FY) 2010 Budget Estimates, Justification of Estimates, May 2009, National Defense Sealift Fund (NDSF) Sealift Cost Analysis for President's Budget FY10," (Washington, DC: Government Printing Office, 2009), 45. www.finance.hq.navy.mil/FMB/10pres/NDSF_book.pdf (accessed February 1, 2011).

⁵⁵ U.S. Navy, *The U.S. Navy's Military Sealift Command Handbook 2010*, U.S. Government, 19.

Modeled on the U.S. Air Force's Civil Reserve Air Fleet (CRAF) program, the Voluntary Intermodal Sealift Agreement (VISA) was approved as a DOD commercial sealift readiness program on January 30, 1997. VISA is a partnership between the U.S. Government and the maritime industry to provide the Department of Defense (DOD) with "assured access" to commercial sealift and intermodal capacity including ships, cargo handling equipment, terminal facilities and intermodal management services. DOD can activate the VISA program in three stages with each stage representing a higher level of capacity commitment.⁵⁶

MSP participants must also participate in VISA but not all VISA participants receive MSP payments.⁵⁷ In contrast to MSP, there is no direct cost to the government for VISA other than the U.S. Maritime Administration's administrative cost to oversee the program. However, DOD gives highest preference to carriers that are VISA participants even when charging a higher freight rate. Regardless, commercial lift capacity has always been available when required and DOD has not invoked VISA since the program's inception.

Sealift and sea basing are efficient and effective means of moving equipment and supplies, sustaining forces in theater, and providing a base of operations for both military and civilian organizations. Movement by sealift is far less expensive than airlift. Ships are slower than airplanes but, when moving large volumes of cargo, sealift can be more time effective as well. Time is lost however when a ship must be activated from a cold start. Therefore, a best scenario would be to have the ships loaded and standing by in the vicinity of where they will likely be required. Unfortunately, under current fiscal constraints, the nation cannot afford the additional cost of operating ships that are just standing by, waiting for a disaster. The ships must be available to support other DOD activities.

⁵⁶ U.S. Maritime Administration, "Voluntary Intermodal Sealift Agreement," http://www.marad.dot.gov/ships_shipping_landing_page/national_security/vol_intermodal_sealift_agreement/vol_intermodal_sealift_agreement.htm, (accessed February 2, 2011).

⁵⁷ U.S. Navy, *The U.S. Navy's Military Sealift Command Handbook 2010*, U.S. Government, 19.

Potential for Sea-based Logistics in COCOM Activities

Combatant Commands (COCOMs) conduct a variety of exercises to strengthen regional partnerships and increase interoperability between U.S. and partner nation forces. Exercise scenarios include maritime security, peacekeeping operations, counter-terrorism, counter-drug, and counter-migration. U.S. law limits humanitarian and civic assistance (HCA) exercises but they typically include medical, dental, veterinary, construction, and engineering civic action programs and readiness training exercises.⁵⁸

U.S. Southern Command (USSOUTHCOM) began *New Horizons* in the mid-1980s as an annual series of joint and combined HCA exercises conducted generally in disadvantaged rural areas of Latin American and Caribbean nations. *Continuing Promise* is also an annual USSOUTHCOM exercise for which the primary support platform alternates between a large deck Navy combatant and the hospital ship *USNS Comfort*. These exercises last several months and allow deployed U.S. forces, predominately National Guard and Reserve Component forces on annual training, to work alongside partnering and host nation forces.⁵⁹ The strategic lift requirement for New Horizons-Haiti 2010 was 45,484 sqft at an estimated cost of \$840,000. The lift for New Horizons-Panama 2010 was 32,882 sqft at \$604,000.⁶⁰ Given the frequency of these exercises, the certainty of hurricanes and the probability of other disasters, perhaps a combination afloat warehouse, training platform, and mobile field hospital would be useful in the Caribbean region.

A subordinate USSOUTHCOM command, Joint Interagency Task Force South (JIATF-South) is a multiservice, multiagency, multinational intelligence fusion center based at Key West,

⁵⁸ U.S. Southern Command, "Exercises/Operations," <http://www.southcom.mil/AppsSC/pages/exOps.php> (accessed February 20, 2011).

⁵⁹ U.S. Southern Command, "New Horizons: Guyana," <http://www.southcom.mil/appssc/factFiles.php?id=123> (accessed January 17, 2011).

⁶⁰ Eric Dawson, e-mail message to author, January 20, 2011.

Florida.⁶¹ JIATF-South detects, monitors illicit trafficking targets and other narco-terrorist threats, primarily in the Gulf of Mexico and Caribbean Sea, and hands them off to the appropriate law enforcement entity.⁶² A sea-based staging platform might be advantageous to JIATF-South operations.

In the U.S. Pacific Command (USPACOM) area of responsibility, the U.S. Navy is the prevalent force to maintain open sea lanes of communication and counter “the tyranny of distance.” Annual HCA exercises like *Pacific Partnership* are centered on the maritime component. *Pacific Partnership 2010 (PP10)* spanned five months and included visits to six countries. Personnel supporting PP10 included service members from the U.S. Army, Navy, Air Force and Marine Corps, the armed forces of ten partner nations, seven embarked NGOs, and ten NGOs supporting operations from shore. Helicopters and landing craft were used to insert teams into remote locations identified by host nation officials as most in need of assistance. The teams worked ashore during the day and came back to the ships each night.⁶³ While accommodations were perhaps not quite 5-star, this seabasing capability greatly enhanced the capacity of PP10 and proved the value of afloat staging bases. Two hospital ships, the U.S. Navy’s *USNS Mercy* and the Indonesian Navy’s *KRI Dr Soeharso* supported PP10. However, *Mercy* took about thirty days to arrive on station and another thirty days to return to her homeport at San Diego, California. *Mercy*’s sixty days of transit time alone added an additional \$7.6 million to the total cost of the exercise.⁶⁴

⁶¹ Wikipedia, “Joint Interagency Task Force South,” http://en.wikipedia.org/wiki/Joint_Interagency_Task_Force_South (accessed February 2, 2011).

⁶² Joint Interagency Task Force South, <http://www.jiatfs.southcom.mil/index.aspx> (accessed February 2, 2011).

⁶³ U.S. Pacific Command, “Pacific Fleet Announces Pacific Partnership 2010,” *PACOM Headlines*, February 24, 2010. http://www.pacom.mil/web/Site_Pages/Media/News%20201002/20100224-Pacific%20Partnership%202010.shtml (accessed February 2, 2011).

⁶⁴ Daily operating cost for *USNS Mercy (T-AH 19)* estimated based on figures provided by Military Sealift Command Headquarters Naval Fleet Auxiliary Force Program Office (PM1) via email

As the combatant commanders conduct HCA exercises, incorporating logistics-over-the-shore (LOTS) for material delivery could provide valuable training opportunities for LOTS operators. General Walter Kross, former Commander of USTRANSCOM, wrote in the Spring 1998 edition of Joint Force Quarterly, “In the past, JLOTS exercises have revealed low operational proficiency because of a lack of training opportunities.” USPACOM’s exercise *Cobra Gold* is an important demonstration of Navy and Marine Corps power projection capabilities. To support *Exercise Cobra Gold ‘11*, two Maritime Prepositioning Force (MPF) ships, *USNS 1st Lt. Jack Lummus* and *USNS 1st Lt. Harry L. Martin*, offloaded equipment and supplies at Sattahip, Thailand. The ships were offloaded “in-stream” utilizing LOTS capabilities.⁶⁵ *Cobra Gold* includes many HCA components. It is an important exercise for partnership and capacity building for major combat operations (MCO) and one of very few LOTS exercises. Utilizing LOTS as a regular component of HCA activities would increase the LOTS training opportunities and help to ensure those capabilities are available for HA/DR as well as MCO. The historical successes, advantages of, and opportunity for sealift only begin to make the argument sea-based logistics. These arguments are strengthened by a side-by-side comparison of platform capabilities.

Comparing Platform Capabilities

The C-17A Globemaster III is 174 feet in length with a wingspan of 169.8 feet. The cargo compartment is 88 feet long, 18 feet wide and 12.33 feet high. Cargo capacity is 1,584 square

correspondence on May 2, 2011: Each hospital ship (T-AH) is funded for 150 days of full operating status (FOS) underway time on alternate years. *USNS Comfort (T-AH 20)* FY11 FOS daily rate is \$180,927. *USNS Mercy* FY12 FOS daily rate is \$126,037. The daily rate for reduced operating status (ROS) is the same for both ships. FY11 ROS daily rate is \$42,041. FY12 ROS daily rate is \$70,156, a 67% increase. The Supported Combatant Commander funds the Medical Treatment Facility (MTF) employed onboard the ship. Based on costs for *USNS Comfort* support to Exercise Continuing Promise 2011, the estimated MTF cost for Pacific Partnership 2010 was \$1.7 million.

⁶⁵ U.S. Marine Corps, “Navy-Marine Corps Team Projects Combat Power Ashore,” <http://www.usmc.mil/unit/mcbjapan/Pages/2011/Navy-Marine%20Corps%20team%20projects%20combat%20power%20ashore.aspx> (accessed February 20, 2011).

feet, 19,535 cubic feet, or 76.3 long tons. Speed is 450 knots. Range (without refueling) is 2,400 nautical miles. Flight crew consists of three, two pilots and a loadmaster. The cost to build a C-17 is \$191 million per unit.⁶⁶ The reimbursable hourly rate for use of a C-17 by other federal users is \$11,658 per hour.⁶⁷

USNS 1st Lt Jack Lummus (T-AK 3100) is 673 feet in length, 105.5 feet wide, and has a draft of 33 feet. *Lummus* has a cargo capacity of 162,500 square feet for roll-on roll-off or break bulk cargo, 1.6 million gallons of petroleum products, 98,994 gallons of potable water, and 522 20-foot containers (TEU) including 41 refrigerated containers. This provides for a total dry cargo capacity of 246,020 square feet, 2,334,920 cubic feet or 19,588 long tons. Speed is 17.7 knots. Range (without refueling) is 11,107 nautical miles. *Lummus* might carry a crew of nine civilian contract mariners in ROS. In FOS, *Lummus* carries 29 civilian contract mariners and 8 military personnel.⁶⁸ It would cost an estimated \$200 million to build *Lummus* today.⁶⁹ Based on a daily operating cost of \$51,960, the hourly operating rate is \$2,165.

Both the C-17 and the *Lummus* are limited to the combined weight of fuel and cargo. This means that carrying more cargo weight limits the fuel capacity thus limiting the range. Conversely, carrying more fuel to extend the range limits the cargo capacity. However, for the purpose of this discussion, each platform will be able to carry maximum fuel and maximum cargo. Calculations include returning the platform(s) to home station. The requirement is to move 2,000 tons a distance of 2,000 miles. This lift would take twenty-seven (27) C-17 lifts (plus returns) and 240 hours flight time (including returns) at a cost of \$2,797,920. The same lift would

⁶⁶ U.S. Department of Defense, "Contracts for Tuesday, June 22, 2010," <http://www.defense.gov/contracts/contract.aspx?contractid=4307> (accessed January 29, 2011).

⁶⁷ U.S. Department of Defense, Office of the Under Secretary of Defense (Comptroller), "Department of Defense FY 2011 Reimbursable Rates," <http://comptroller.defense.gov/rates/fy2011.html> (accessed January 29, 2011).

⁶⁸ U.S. Navy Military Sealift Command, "USNS 1st Lt Jack Lummus (T-AK 3011)," *Ship Inventory*, <http://www.msc.navy.mil/inventory/ships.asp?ship=118> (accessed January 31, 2011).

⁶⁹ Keith Bauer, e-mail message to author, May 2, 2011.

take *Lummus* one (1) lift (plus return) and 226 hours sea time (including return) at a cost of only \$489,265, a savings of \$2.3 million. The breakeven point appears to be about five (5) C-17 loads, or about 380 tons. Above this amount, sealift is more cost effective.

Lummus offers additional capabilities. Four cargo cranes (each with 39-ton capacity) support lift-on/lift-off operations. She has a stern ramp and carries Navy lighterage to conduct LOTS operations for vehicles and bulk cargo. *Lummus* carries bulk liquid cargo and has two fuel hose reels for over-the-shore fueling. *Lummus* has water-making capacity of 25,000 gallons per day and a water hose reel for over-the-shore potable water transfer. *Lummus* also has a helicopter-landing platform for personnel and small package transfer.⁷⁰ As covered previously, the United States' ability to continue to provide substantial and cost-effective HA/DR leans heavily toward establishing a program for sea-based logistics platforms.

Recommendation

The U.S. government should establish a program to utilize merchant cargo ships as joint, interagency, multinational sea-based logistics platforms (SLP) to support theater opening and port opening (TOPO), humanitarian and civic assistance (HCA), humanitarian assistance and disaster response (HA/DR), LOTS training, and other operations required to support national security and theater engagement strategies. These ships would be prepositioned in regions where the U.S. government frequently conducts HCA and HA/DR operations.

The organizations participating in the program and operating within those regions will determine the number of ships required and the specific cargo to be carried aboard. Those organizations could include Department of State (DoS), U.S. Agency for International Development (USAID), Federal Emergency Management Agency (FEMA), Department of

⁷⁰ NavSource Naval History, "Service Ship Photo Archive: USNS 1st. Lt. Jack Lummus (T-AK-3011)," *NavSource Online*, <http://www.navsource.org/archives/09/13/133011.htm> (accessed January 31, 2011).

Defense (DOD), United Nations (UN), Red Cross/Red Crescent, and other key national and international government, non-government, and non-profit relief organizations.

Prepositioning the ships in theater enables rapid response and provides important partnering opportunities, including the opportunity to build sea-based logistics capacity in those partner nations with strong maritime heritage, substantial maritime capacity, and existent infrastructure. Partnering opportunities could also include partnering with America's civilian stevedoring professionals. Scheduled HCA cargo operations could offer increased opportunity for private sector cargo handling professionals to gain experience in LOTS operations. This could possibly facilitate the development of an expeditionary cargo handling capability that could be employed, on a paid or volunteer basis, on future HCA or HA/DR events.

The cargo capacity of the SLP allows delivery of tremendous cargo volumes by the most cost-effective means. The ships will be able to support theater opening operations and conduct logistics-over-the-shore. This will allow for cargo discharge where a seaport is destroyed or non-existent. Capacities for berthing, food and fuel storage, and water and power generation enable the ship to be completely self-sustaining with no requirement for basing ashore.

While the SLP concept is modeled on the MPS program, these platforms are unlike the MPS in several ways. Most significantly, they would not be just "standing by" for a contingency. They would be the focal point of planned routine theater engagement activities. Ideally, each region would have at least two platforms allowing one to be preparing for, executing, or refitting from an HCA operation while the second remained in ready status to respond to an emergent HA/DR event. The second platform would engage in planned TE/HCA activities when the first returns to ready status.

Currently, a great many organizations conduct activities within the regions. Very frequently, these activities are not coordinated with or even known by other organizations. The SLPs could provide a focal point to help coordinate some of those activities. The platforms could

also provide meeting spaces, computer and internet connectivity, and communications suites. Merchant ships carry enormous amounts of food, water, and fuel and generate tens of thousands of gallons of surplus potable water a day. They have significant power generating capacity and can maintain many air-conditioned spaces onboard. These capabilities will enable emergency responders to go ashore to do their work and to return to the ship for meetings, meals, or rest.

The question of how to pay for the program is answered by better utilizing USG-owned assets and shifting costs from other activities. As discussed earlier, the RRF serves a critical function in assuring sealift capabilities in contingencies. However, commercial lift has shown to be readily available to meet DOD lift requirements. Meanwhile, taxpayers pay \$5.62 million per ship every year to have these very capable assets sit idly. Each RRF ship should be seen as an empty warehouse, a warehouse that can be moved in its entirety. Shifting materiel from shore-based warehousing would eliminate or reduce the cost of leasing, renting, or buying those spaces. Air conditioning costs would transfer as would the costs for inventory management, maintenance, and repair.

The \$174 million spent annually on the Maritime Security Program (MSP) could operate nine SLP ships.⁷¹ Further, this would increase tax revenues by creating an additional 411 merchant mariner jobs, and countless other jobs in port infrastructure, ship husbandry, maintenance, repair, and crew training.⁷² The funds spent on strategic lift for a single annual HCA exercise could operate a SLP ship in excess of 16 days.⁷³ This would provide the lift

⁷¹ Calculated on *USNS Lummus* daily operating rate of \$51,960, or \$18.97M annually.

⁷² A ship in ROS employs nine mariners for twelve months. A ship similar to *USNS Lummus* in FOS typically employs two twenty-nine person crews on a rotating work schedule, fifty-eight jobs. For instance, each crew might work a four-month tour - four months on ship, four months off. Therefore, by moving these RRF ships from ROS to FOS, each ship would employ an additional forty-nine mariners. Multiplied by nine ships equates to 441 new jobs.

⁷³ Calculated on New Horizons-Haiti 2010 cost of \$840,000 and *USNS Lummus* daily operating rate of \$51,960.

requirement and maintain the SLP on station to provide additional capabilities including force sustainment to reduce exercise cost.

The SLP would carry one or more mobile field hospital (MFH) units. This could reduce the requirement for the deployment of the more costly hospital ships USNS COMFORT and USNS MERCY. The MFH units carried could belong to DOD or to Doctors Without Borders, Red Cross/Red Crescent, or the United Nations. Carrying non-DOD units would further reduce costs to DOD and reduce warehousing and transportation costs to the non-DOD organization. Deploying the MFH units ashore would increase patient throughput and help to hasten DOD's transition from the response, again reducing costs. This is a critical factor in the SLP concept. The SLP facilitates more effective and efficient response by those other non-DOD organizations.

Conclusion

The ships in the Ready Reserve Force are maintained in a higher readiness status to facilitate the rapid deployment of U.S. military forces to support combat contingencies. Each RRF ship is programmed in to one or more of the plans that support those deployments. Allocating RRF ships to the SLP program would introduce risk to those plans. That risk is mitigated in at least three ways. First, the commercial shipping industry has demonstrated more than adequately that it can meet DOD lift requirements. Second, the SLP would be configured to support theater opening and refugee operations, key components of combat operations. Finally, providing the Geographic Combatant Commanders with dedicated humanitarian platforms to support consistent theater engagement may be the best way to avoid ever having to execute those plans.

The initial analysis indicates that an SLP program would be cost effective. It would utilize available assets and be less expensive than the way in which DOD and other organizations currently conduct logistics to support foreign engagement and disaster response. An important cost-benefit to be realized by increasing the nation's use of sealift would be a reduction in the

demand for military airlift. This would reduce the number of flight hours put on those aircraft and minimize the resultant maintenance, repair, and replacement costs. The SLP program would create many jobs and the possibility of ships being purpose-built for this mission in U.S. shipyards. However, the greatest benefit of the program would be the strategic messaging of American “humanitarian power projection.” The ships could be painted grey, black, or white with red crosses and red crescents on the sides. They would be undeniably a “global force for good.”

Bibliography

- Baker, S. G. *Federal Response to Hurricane Katrina: Lessons Learned*. Washington, DC: Government Printing Office, 2006.
- Barker, J. R. *The United States Merchant Marine in the National Perspective*. Lexington, Massachusetts: D.C. Heath and Company, 1970.
- Betaque, N. E. *Naval Expeditionary Logistics: Enabling Operational Maneuver from the Sea*. Washington, DC: National Academy Press, 1999.
- Buss, T. F., and A. Gardner. *Haiti in the Balance: Why Foreign Aid Has Failed and What We Can Do About It*. Washington, DC: Brookings Institute, 2008.
- Button, R. W. *Maritime Prepositioning Force (Future): Capability Assessment*. Santa Monica, California: RAND Corporation, 2010.
- Button, R. W. *Warfighting and Logistic Support of Joint Forces from the Joint Sea Base*. Santa Monica, California: RAND Corporation, 2007.
- Buzby, Mark H. "Commander's Perspective: Haiti Earthquake Relief." *Sealift*, March 2010. <http://www.msc.navy.mil/sealift/2010/March/perspective.htm> (accessed January 20, 2011).
- Chairman of the Joint Chiefs of Staff. "CJCS Guidance for 2011." Washington, DC: Government Printing Office, 2011.
- Chairman of the Joint Chiefs of Staff. "National Military Strategy of the United States of America, 2011: Redefining America's Military Leadership." Washington, DC: Government Printing Office, 2011.
- Clausewitz, Carl von. *On War*. Translated by Peter Paret and Michael Howard. Princeton, NJ: Princeton University Press, 1976.
- Cruikshank, J. L. *In Peace and War: A History of the U.S. Merchant Marine Academy at Kings Point*. Hoboken, New Jersey: John Wiley & Sons, Inc., 2008.
- Dunnigan, Katie. "MSC Call to Action: Hurricane Katrina Relief." *USNS Comfort*. <http://www.msc.navy.mil/comfort/katrina/action.htm> (accessed February 18, 2011).
- Dyer, G. C. *Naval Logistics*. Annapolis, Maryland: United States Naval Institute, 1960.
- Elleman, Bruce A. *Waves of Hope: The U.S. Navy's Response to the Tsunami in Northern Indonesia*. Newport, RI: Navy War College Press, 2007.
- Fontaine, Scott. "To Save of Fuel Costs, TRANSCOM Mixes it Up." *Air Force Times*, February 14, 2011.
- Foreign Assistance Act of 1961 (P.L. 87-195).
- Hedden, Robert S. "Prepositioned Sealift for Humanitarian Operations." Department of the Air Force Air University, 2003.
- Isola, Eileen. "Leading Air Mobility Operations in Complex Humanitarian Emergencies." Department of the Air Force Air University, 2002.
- Joint Interagency Task Force South. <http://www.jiatfs.southcom.mil/index.aspx> (accessed February 2, 2011).
- Jomini, A. H. *The Art of War*. Mechanicsburg, Pennsylvania: Stackpole Books, 1992.

- Lambert, Robert B. *Sealift in Operation Desert Shield*. Pennsylvania: U.S. Army War College Press, 1991.
- Mahan, A. T. *Influence of Seapower Upon History, 1660-1783*. Mineola, New York: Dover Publications, 1987.
- Martinez, Miguel R. "Lessons from Significant Foreign Disaster Relief Operations Applied to USAFRICOM." U.S. Naval War College, 2008.
- Matthews, James K., Cora J. Holt. *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm*. Scott Air Force Base, Illinois: United States Transportation Command, 1992.
- Miller, S. E. *Naval Strategy and National Security: An International Security Reader*. Princeton, New Jersey: Princeton University Press, 1988.
- NavSource Naval History. "Service Ship Photo Archive: USNS 1st. Lt. Jack Lummus (T-AK-3011)." NavSource Online. <http://www.navsource.org/archives/09/13/133011.htm> (accessed January 31, 2011).
- Nersesian, R. L. *Ships and Shipping: A Comprehensive Guide*. Tulsa, Oklahoma: PennWell Publishing Co., 1981.
- Neuhardt, M. "MSC Buys Prepositioning Ships." *Sealift*, February 2009. <http://www.msc.navy.mil/sealift/2009/February/prepositioning.htm> (accessed January 31, 2010).
- Neuhardt, Mike, Trish Larson. "Lummus and JLOTS Lift Hearts in Haiti." *Sealift*, March 2010. <http://www.msc.navy.mil/sealift/2010/March/lummus.htm> (accessed February 3, 2011)
- Ohls, Gary J. *Somalia ... From the Sea*. Newport, RI: Navy War College Press, 2009.
- Robert T. Stafford Disaster Relief and Emergency Assistance Act, Title V, 42 U.S.C. §§5191-5193, as amended by, Section 681(b) of the Post Katrina Emergency Management Reform Act (PL 109-295), and implementing regulations at 44 CFR Part 206, Subparts B and C.
- Roland, A., W. J. Bolster, A. Keysser. *The Way of the Ship: America's Maritime History Reinvisioned, 1600-2000*. Hoboken, New Jersey: John Wiley & Sons, Inc., 2008.
- Secretary of Defense. Memorandum. "Department of Defense (DOD) Efficiencies Initiative." August 16, 2010. <https://dap.dau.mil/policy/Documents/Policy/OSD%2009637-10.pdf> (accessed February 1, 2011).
- Shaw, R. C. "A Model for Interagency Coordination During Military Operations." U.S. Army Command and General Staff College, 1997.
- SRA International. "Enterprise Logistics: Joint Task Force – Port Opening." <http://www.sra.com/enterprise-logistics/joint-task-force-port-opening.php> (accessed February 3, 2011).
- Sun-Tzu. *Art of War*. Boulder, Colorado: Westview Press, Inc., 1994.
- Swain, Richard M. *Lucky War: Third Army in Desert Storm*. Fort Leavenworth, Kansas: U.S. Army Command and General Staff College Press, 1997.
- Turabian, Kate L. *A Manual for Writers of Research Papers, Theses, and Dissertations*. Chicago, Illinois: University of Chicago Press, 2007.

- U.S. Agency for International Development. "Haiti - Earthquake Fact Sheet #73 Fiscal Year (FY) 2010, dated September 24, 2010."
www.usaid.gov/ht/docs/eqdocs/ofda_fact_sheets/09.24.2010_haiti_factsheet_73.pdf
 (accessed January 21, 2011).
- U.S. Agency for International Development. "Haiti: Post-earthquake Response Homepage."
<http://www.usaid.gov/ht/helphaiti.html> (accessed January 20, 2011).
- U.S. Agency for International Development. "Pakistan – Floods Fact Sheet #9 Fiscal Year (FY) 2011, dated January 21, 2011." <http://www.usaid.gov/pk/downloads/da/01.21.11-USAID-DCHAPakistanFloodsFactSheet9-FY2011.pdf> (accessed February 1, 2011).
- U.S. Congress, House. *Statement of General William E. Ward, U.S. Army, Commander, United States Africa Command before the House Armed Services Committee, 13 March 2008.*
- U.S. Department of Defense. "Contracts for Tuesday, June 22, 2010."
<http://www.defense.gov/contracts/contract.aspx?contractid=4307> (accessed January 29, 2011).
- U.S. Department of Defense, Office of the Under Secretary of Defense (Comptroller).
 "Department of Defense FY 2011 Reimbursable Rates."
<http://comptroller.defense.gov/rates/fy2011.html> (accessed January 29, 2011).
- U.S. Department of Homeland Security, Office of the Inspector General. "American Samoa 2009 Earthquake and Tsunami: After-Action Report."
http://www.dhs.gov/xoig/assets/mgmtrpts/OIG_11-03_Oct10.pdf (accessed January 10, 2011).
- U.S. Department of Transportation. "Danger and Opportunity; Hurricane Recovery Support."
Multimedia Gallery, Maritime Administration Video Archives.
http://www.marad.dot.gov/library_landing_page/multimedia/multimedia.htm (accessed February 3, 2011).
- U.S. Department of Transportation. "Five Years Later, Our Commitment Continues." *Fast Lane*, August 30, 2010. <http://fastlane.dot.gov/2010/08/dot-katrina-effort-began-immediately-work-continues-five-years-later.html> (accessed February 1, 2011).
- U.S. Geological Survey. "Summary of Magnitude 9.0 Sumatra-Andaman Islands Earthquake & Tsunami: Sunday, December 26, 2004 at 00:58:53 UTC."
<http://earthquake.usgs.gov/earthquakes/eqinthenews/2004/us2004slav/eqsummary.html>
 (accessed February 1, 2011).
- U.S. Marine Corps. "Navy-Marine Corps Team Projects Combat Power Ashore."
<http://www.usmc.mil/unit/mcbjapan/Pages/2011/Navy-Marine%20Corps%20team%20projects%20combat%20power%20ashore.aspx> (accessed February 20, 2011).
- U.S. Maritime Administration. "National Defense Reserve Fleet: Introduction."
http://www.marad.dot.gov/ships_shipping_landing_page/national_security/ship_operations/national_defense_reserve_fleet/national_defense_reserve_fleet.htm (accessed February 1, 2011).
- U.S. Maritime Administration. "Voluntary Intermodal Sealift Agreement."
http://www.marad.dot.gov/ships_shipping_landing_page/national_security/vol_intermodal_sealift_agreement/vol_intermodal_sealift_agreement.htm, (accessed February 2, 2011).

- U.S. Navy. "Department of the Navy Fiscal Year (FY) 2010 Budget Estimates, Justification of Estimates, May 2009, National Defense Sealift Fund (NDSF) Sealift Cost Analysis for President's Budget FY10."
http://www.finance.hq.navy.mil/FMB/10pres/NDSF_book.pdf (accessed February 1, 2011).
- U.S. Navy. *The U.S. Navy's Military Sealift Command Handbook 2010*. U.S. Government, 2010.
- U.S. Navy Military Sealift Command. "USNS 1st Lt Jack Lummus (T-AK 3011)." *Ship Inventory*. <http://www.msc.navy.mil/inventory/ships.asp?ship=118> (accessed January 31, 2011).
- U.S. Navy Military Sealift Command. "USNS Comfort (T-AH 20) Fact Sheet." U.S. Navy. http://www.defense.gov/home/features/2010/0110_haiti/images/USNSComfortFactSheet.pdf (accessed February 1, 2011).
- U.S. Pacific Command. "Pacific Fleet Announces Pacific Partnership 2010." *PACOM Headlines*, February 24, 2010.
http://www.pacom.mil/web/Site_Pages/Media/News%20201002/20100224-Pacific%20Partnership%202010.shtml (accessed February 2, 2011).
- U.S. President. "National Security Strategy: May 2010." Washington, DC: Government Printing Office, 2010.
- U.S. President. "National Strategy for Homeland Security: October 2007." Washington, DC: Government Printing Office, 2011.
- U.S. Southern Command. "Exercises/Operations."
<http://www.southcom.mil/AppsSC/pages/exOps.php> (accessed February 20, 2011).
- U.S. Southern Command. "Helping Haiti: A Look Back at Operation Unified Response." *Fact File*, November 1, 2010. <http://www.southcom.mil/AppsSC/factFilesLarge.php?id=138> (accessed February 20, 2011).
- U.S. Southern Command. "New Horizons: Guyana."
<http://www.southcom.mil/appssc/factFiles.php?id=123> (accessed January 17, 2011).
- Wikipedia. "Hurricane Ike." http://en.wikipedia.org/wiki/Hurricane_ike (accessed January 10, 2011).
- Wikipedia. "Joint Interagency Task Force South."
http://en.wikipedia.org/wiki/Joint_Interagency_Task_Force_South (accessed February 2, 2011).
- Wikipedia. "List of Merchant Marine Capacity by Country."
http://en.wikipedia.org/wiki/List_of_merchant_marine_capacity_by_country (accessed April 29, 2011).
- Wikipedia. "Mulberry Harbour." http://en.wikipedia.org/wiki/Mulberry_harbour (accessed February 1, 2011).
- Wikipedia. "Normandy Landings." http://en.wikipedia.org/wiki/Normandy_landings (accessed February 1, 2011).